Technology Deployment Initiatives for the DOE Office of Environmental Management

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Thank you very much. I come this morning as a survivor. I was present on May 7 in Washington at the famous hearing that we've heard about this morning, and I am here to talk about it. Following 2 hours of drilling of DOE senior management that day, it was my turn to participate on the next panel with GAO. This was the fourth time that I had testified before Congress, but it was the first time that prior to the hearing, both sides of the aisle conducted about 2 to 3 hours of interview by phone. So, I knew exactly what I was going to say. That's an indication of how important Congress thinks this of technology development is.

In that hearing, we actually had some good things to say about what was going on in EM, and that confused the committee. I say this because committee members increased the temperature of their questions when they started hearing that we had something good to say. Suddenly, I realized that I was defending the Department almost exclusively that day. Well, I found out later from one of the staffers that as the committee members turned the heat up, the staffers became uncomfortable and passed a note to one of the committee members that said, "Lighten up, he doesn't work for DOE." I survived.

Rita, thank you for the invitation to participate in this conference. I think that this is a really critical event. It has the kinds of key ingredients that we need to be successful in what we are trying to accomplish. Obviously, over the past year, deployment has been the buzzword, the key word. It used to be demonstration — and you know what that is: demonstration is just an activity to show technical feasibility. Then the buzzword became implementation, and that really is an activity where technology shows some economic feasibility — at least to somebody. And then the buzzword became commercialization. Then people figured out that commercialization is really the primary responsibility of the private sector, not really that of DOE. DOE just has the obligation to provide the right kind of an environment for commercialization to take place.

Now the buzzword is just plain deployment. And that has been correctly defined today as multiple uses of a technology. In fact, I counted the times it was used correctly. There were at least four times when deployment was properly used this morning, and I congratulate the speakers. During the past 6 months, I have sat through innumerable vugraphs that looked dated by a few years, where the word demonstration had been carefully scratched out and the word deployment inserted. Deployment is multiple use of a technology. Implementation is the first use, and so on.

Congress, and I think also the Environmental Management Advisory Board, believe they are quite right in raising the issue of whether the investments in technology deployment by the Department have really borne fruit. I think that when the pages of last year and this year are finally written, that we will owe a major debt of thanks to Congress for helping EM get its act together. We can argue whether past investments should already have borne fruit, whether there is a bumper crop of budding late-stage technologies on the verge of being deployed, etc. Regardless, the point that Congress made is really clear and it actually has a future orientation. Congress fully expects deployments to proceed more rapidly in the future. And that is the gauntlet that has been thrown down. Well, that's a great challenge for everybody in this room and a great opportunity for people who want to make a difference in this area.

I am going to admit a bias here. I don't believe that it is possible for DOE to be fully successful in deployment unless there is much more industry participation. Gerald showed us a good chart. That's where technologies hopefully come from: not from national labs, not universities, and not from trade associations, but from industry. If industry is not fully involved, it just won't work. The challenge for us is going to be how to accomplish this. How do we build in the necessary incentives? How do we overcome past ways of doing business?

To integrate industry better, we on the EM Advisory Board think that some major cultural gaps are going to have to be overcome: gaps between DOE and industry, between industry and site contractors (those people who are inside the fence and have industrial perspectives), between DOE and various types of site contractors, and obviously, the cultural gaps within DOE itself — and they are big. The track record shows that we have made some progress. But a lot more needs to be done to overcome these cultural gaps and increase deployment.

We learned this morning that Jim has some roots here in western Pennsylvania. I have some roots in Mexico, where I was born. I didn't move to the U.S. until I was 4 years old, and that's when I began to learn English. I know something first-hand about overcoming cultural gaps — and transferring technology when you're not sure what it is that's going to happen. I know that it takes willingness, it takes good communication, it takes long-term commitment on all sides, and it takes some incentives along the way. Bridging cultural gaps does not happen overnight, in a single year, or even over several years, but it can be very rewarding and even fun along the way.

For many of us who have traveled outside the U.S., we've been exposed to cultural gaps — especially in communication and understanding. I think that many of us have experienced the phenomenon that if you are willing to try to overcome these gaps, you can get some good things in return.

Now let me lighten up for just a moment as I give you some examples of what I mean by cultural gaps. As we travel in these other countries with different cultures, we've all seen those signs and notices posted in different places and written in English. Sometimes, the message is not clearly stated, but the meaning is usually quite clear. The real message may not be evident, but the meaning is there. Let me give you a couple of examples of what I am talking about and see if you can't discern the meanings. Take a sign that I saw one time in a Mexican resort hotel that was designed to calm the fears of American tourists. It read, "The Manager has personally passed

all the water served here." Then there was a sign on a German elevator: "Do not enter the lift backwards and only when lit up." Or a sign in a Romanian elevator: "The lift is being fixed for the next day. During that time, we regret that you will be unbearable." A sign in a Japanese shop: "Our nylons cost more than common but you'll find they are best in the long run." Finally, to provide equal opportunity, there was a sign in a Russian hotel situated across from a monastery that read, "You are welcome to visit the cemetery where famous Russian and Soviet composers, artists, and writers are buried daily except Thursdays."

I think that you'll agree that in spite of the cultural gaps represented by these signs, we are not standing in the way of real commerce. You can understand what was being said and why, because the parties involved in this transaction wanted successful commerce and wanted successful interactions to take place.

Let's relate this concept to the current cultural gaps affecting deployment of new technologies within and around the DOE complex. Here the challenge, I think, is to make certain that all parties involved are incentivized to succeed. After all, that's what partnerships are all about. Partnerships aren't good just for one side or the other. Partnerships are good for everyone concerned. Unfortunately, I don't think we've reached the point where everyone can yet define what victory in deployment is. It isn't just numbers of deployments that are going to be important, but rather deployments to what end, deployments at what rate, and deployments by whom. We haven't answered those questions yet.

Let me say a few words about the EM Advisory Board, because I think it is a very important part of what is going on within EM right now. It was started several years ago as part of a process to open DOE up to the outside world. The Board is considered to be key to an understanding of what is going on outside the Department. And there are other manifestations of this opening of DOE to the world: site-specific advisory boards, site-technology coordinating committees, innumerable public meetings, and so on.

The EM Advisory Board serves as a two-way window. There are about 25 people on the full Board and they come from diverse backgrounds. Let me just cite an example that occurred one time the Assistant Secretary was complaining to the Board about the lack of understanding of his program on the Hill. And he was really wailing about it — that nobody up there understands what DOE is all about, what we're doing. Then, one of the Board members raised his hand and said, "Welcome to the club."

There are six committees on this Board and all the committees are assisted by consultants. We have about 50 total consultants on the Board, again from all walks of life, many of them highly experienced and very talented people. The Technology Development Transfer Committee, which I chair, has about a dozen members. Andy Paterson is a member of that committee and he is here today.

As part of our job to help convince, help educate, the Hill on what was going on, we recently reviewed the technology deployment initiative (TDI) that was conducted last year and the number of proposals that were submitted to it. We're delighted that it is going to be run again. I think that it is a real opportunity for those of you in industry to participate more fully this year

than you were able to last year. So, let me just summarize a couple of the key things that we learned. One of the major things that we recognized in our review of this initiative was that incentives can really promote cultural changes and behavioral changes. They can really do this and it doesn't take a lot of money to accomplish this. The successful proposals require communication between sites: between technology proponents and users, and between DOE and contractors. When you get good intelligent people communicating with one another, whether it be E-mail or face-to-face, things can happen. That is one thing that we learned.

We also learned that the TDI process was competitive, and that this really promoted a great deal of creativity. It was merit-based. It wasn't a matter of my site has 20 percent of all the waste, therefore we get 20 percent of all the funding. It wasn't like that at all. It was not entitlement-based. You had to put a coherent proposal together even if you had a great technology. A great technology was not sufficient. You also had to surround it with some intelligent work. That's going to be true again as we continue the TDI next year, and we encourage more proposals. We think that a lot of good projects didn't have good proposals written about them, and so this coming year, we are hoping that those good projects do have good proposals around them, because that's what it is all about.

Industry, it turns out, was linked into only one half of the proposals last year, a surprisingly small number. And this led us to ask what is the real state of understanding among DOE, the M&O contractors, and industry? Is it really true that there wasn't enough time to get everything together? Is that the reason why industry wasn't fully involved? Are there other reasons? And they come to mind. But this coming year, the time factor is not going to be there. Gerald told us that there is going to be a TDI. There's opportunity now if you have the technology to link in to a site. In fact, link it to more than one site, and start working out the terms and conditions now. The only way you get real deployment is by multi-site application.

We were surprised about the weak discussions of performance specifications, baselines, and cost savings. All of this is universal. It came to a point that we were giving points if performance specification was spelled correctly. What does it really mean, seriously? It means that it is still not clear where DOE wants to go, where the sites have to go, and how much DOE is willing to spend to get there, and how much needs to be saved to get there. And that is still a pretty fuzzy area, because it is linked in with regulators, stakeholders, and whether the sites are really going to end up staying in existence.

Another thing we saw that was almost universally lacking was a comparison of the advantages of a proposed technology over the competitive technology. What this brings to mind is that well, maybe, the comparative advantages were not known. Maybe the decision-making framework in which these technologies are proposed really needs to be improved so the advantages are made more clear. We wondered whether the focus areas are really the place where the information on alternative technology performance really ought to be. They should know everything that is going on in their area. Do they have the information? Do they have the comparative knowledge of one technology over another so reasonable proposals can be put together?

However, overall and in spite of everything, TDI was a success. And as we've heard, Congress has agreed to fund the best projects by agreeing to a budget of $27 million. That's less than the $50 million that was initially proposed, because it was decided that only 16 projects totaling $27 million were worthy. And oh yes — by the way — if you go to write a proposal this time around with TDI, please read the criteria. They're really serious about having the criteria followed this time.

Congress also asked us to focus on the issue of whether existing records of decision might be reopened to consider new work and better technologies than the ones that were previously selected. That's an important responsibility. We have an obligation to respond to Congress directly about this because we spent the latter part of August and early September trying to share what we have learned about the whole deployment process with key staff members. So, we are in the process now of determining how we are going to proceed with this Congressional request, and how we are going to carry it out.

Moving to the role of industry partnerships and what you can do. Obviously, we expect industry partnerships to produce technologies that can decrease costs and can provide improved results. In order for you to make that case, you're going to have to compare against a baseline. So, I think it would be good to demand a clear statement of the baseline so that you know what it is that you're comparing yourself against. You may have an enabling technology, a technology that allows us to do something that couldn't be done before. Obviously in that case, cost and performance are much less sensitive than if you're just doing an incremental project. You saw on Gerald's stoplight chart that there are still a lot of needs that are not being addressed, that are unmet — where enabling technologies are required. Your efforts are needed. But if your efforts are going to be successful, they must be timely. Your developmental work has got to come in at the right place and at the right time. You've got to know where it fits in, and how it fits in, and when it fits in.

All the sites are doing a better job of identifying their needs. There is clearly something to be learned by reading the big technology-needs book. However, we can list the opportunities and the needs forever, but remember that there is still no market without a commitment to buy rather than to make. And you as industrial people really need to stress that there has to be the real creation of a market, and that only takes place with purchase sources. One of the nice things about the Federal Government is that expenditures are planned well in advance, often years in advance. So you have a projection of what's likely to be spent, what needs to happen, etc. Let me challenge DOE to create the fully functional procurement system that is capable of defining performance requirements for industry. That's what we are shooting at — to solve specific problems. Yet, that's going to require some negotiations with the regulators and stakeholders, but unless we know that the performance requirements are really being put into place, it becomes very difficult to write a purchase order. So we encourage you to focus on the issue of performance requirements.

We also encourage the procurement system to identify and list upcoming opportunities, including the budget and timing of proposed purchases, and we encourage that this list be made available to people who are planning investments and planning their own R&D programs, their own development efforts. We recommend that a commitment to purchase be established under

the proper terms and conditions, commercial terms, and that these commitments to purchase be based around expected results, not just activities. That is how you establish true industry partnerships I think, and that's how DOE becomes a reliable customer for industry.

But, partnerships are two-way streets, so let me turn for a moment to potential industry partners in the audience and let me challenge you too to meet tougher and more realistic development goals and technical goals, and to provide accurate cost and performance data that are reliable, that can be verified, and that can be substantiated. Obviously, after all that's been said and done, to be realistic about the DOE market and the speed with which you can incorporate new ideas, if you haven't done so already, consider attractive applications to be in the DOE market.

Look to the site contractors, including those in the audience here. I am sure that there are some. This is a warning, I think. We believe that incentivized contracts are going to become the wave of the future. We think that the old M&O contracts, the old-boy contracts where you can keep everything in-house and indoors away from the light, are going to be a thing of the past. Everyone is pushing to bring those incentives in. You can be among the first to identify where these technologies can really make a difference, where it is worth the risk, and where there is an incentive in place. I think that contractors who really want to finish the job are the ones who are ultimately going to be successful over the next decade.

Deploying technologies within EM will require all of us to face and overcome cultural gaps. I have lived most of my life doing that, so I see it as a very exciting, professional challenge. Those of you in the audience who in your own way have met and successfully faced cultural gaps, I know you believe as I do that by facing and overcoming cultural gaps, you open up many new and exciting opportunities for yourself and your organization.

Thank you very much for your attention.

Note: This is an edited and abbreviated version of the speech by Edgar Berkey. He has not reviewed this text.